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ABSTRACT

This paper reviews selected literature on otitis media (OM) and its learning consequences in Aboriginal children in rural Australia and reports on a project to develop a community approach to the problem. Aboriginal people are the most disadvantaged group in Australia; have much poorer health and lower life expectancy than other Australians; and face many barriers to education and achievement, which are worse in isolated rural areas. One important barrier to educational participation and success is poor child health. OM is a generic term to cover a range of middle ear problems; left untreated, OM results in hearing loss. Indigenous children have an OM prevalence rate 10 times that of White children, with the highest rates in rural areas. Most OM hearing loss is mild to moderate and may have educational consequences, particularly for children learning English as a second language. A project carried out in three rural and remote schools aimed to raise teacher and community awareness of OM and its effects on learning, promote health strategies to reduce OM prevalence, help teachers develop strategies to reduce effects of hearing loss, and develop a kit of teacher resources. Staff workshops and community events were held at the schools, and particular attention was given to empowering teacher aides. After 3 years, interviews with educators and health personnel indicated that OM awareness had increased among teachers and community, but community involvement was low, and staff turnover impeded program maintenance. The program was judged to have had little effect on OM prevalence or learning outcomes. (Contains 22 references.) (SV)

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Otitis media, learning and community [1][2]

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Abstract

This paper reviews selected literature relating to the medical condition and learning consequences of Otitis Media in Aboriginal children in remote communities and reports on a research project which aimed to develop a whole community approach to the problem. The model brings together health, education, medical professionals, paraprofessionals and the community in a structured and cohesive program based on the school as the lead and central agency. The special significance of community and paraprofessionals, for example teacher aides is considered.

Introduction

In March 2000 a United Nation's representative asked: "How is it that a country like Australia, with its resources, has not yet been able to bring what's less than two percent of the population up to reasonable levels in terms of living standards?" (Carruthers, 2000, p. 22)

> *Aborigines are likely to die up to 25 years earlier than other Australians; half of all Aboriginal men and four in ten women will die before they turn 50.*
>
> *Outside a war zone or famine conditions, Aborigines are the only group of people in the world whose life expectancy has not risen during the past 15 years.*
>
> *Aborigines have the highest rate of rheumatic fever in the world.*
>
> *Aboriginal babies are twice as likely as other babies to die at birth.*
>
> *Aboriginal women are four times more likely than other women to be hospitalised due to an injury.*
>
> *Treatable diseases such as trachoma (which can lead to blindness), glue ear (causing deafness in children), renal failure, heart disease and*

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diabetes are rampant in many communities. Aborigines are up to 18 times more likely than other Australians to die of infectious diseases.

Only 31 per cent of Aborigines continue education past secondary school.

One in five prisoners is Aboriginal.

About 50 per cent of Aborigines are totally dependent on welfare.

Source: Commonwealth Statistics, World Vision, in Carruthers, 2000, p. 2-4.

There are numerous and significant barriers to indigenous children in accessing both primary and secondary education in isolated areas. The following extract from the ATSIC submission (p.21) to the Human Rights and Equal Opportunity Commission's Rural and Remote Education Inquiry in 1999 outlined these barriers:

> *These barriers include the lack of relevance of the curriculum and education generally, racism and discrimination at all levels in society including the school environment and the classroom, poor health, lack of opportunity for the involvement of parents and community in school based delivery of education, levels of incarceration, unemployment, and availability of suitable teachers. These exacerbate the already poor quality or lack of availability of the physical school environment.*

ATSIC Commissioner David Curtis further adds that "... although these problems are faced by Indigenous peoples living in both rural and urban areas, it is the geographic isolation experienced by those living in rural areas that further compounds the situation" (Melbourne hearing, cited in Rural and Remote Education Inquiry, 2000). 31% of Indigenous Australians live in rural and remote areas compared to 14% of non-Indigenous Australians (DETYA and ATSIC submissions cited in Rural and Remote Education Inquiry, 2000). The DETYA submission further stated that approximately 35% of Indigenous primary students in urban areas had significantly lower literacy and numeracy achievement compared with approximately 43% in rural and remote areas (cited in Emerging Themes, 2000).

One of the most important barriers to educational participation and success faced by Indigenous people is the issue of ill health and its far reaching effects on their chances of educational success and subsequent life opportunities. Hearing health is a k

consideration for educationalists Otitis Media (OM) and associated Conductive Hearing Loss (CHL) impair learning.

What is otitis media?

Otitis Media is a generic term used to cover a range of middle ear problems. The tube connecting the nose/mouth area (outside air) and the middle ear is called the Eustachian Tube whose main function is ventilation, allowing air to move in and out of the middle ear space. If the tube becomes blocked, (a common cold or runny nose can cause this), bacteria can grow and cause an infection. The build up of infected fluid stops the eardrum from vibrating and carrying the vibration to the inner ear. This stage of the OM process is also known as 'glue ear'. The child may have associated pain, become hot and irritable and feel unwell, as well as having decreased hearing. The pus builds up behind the eardrum and as a result the drum may burst and pus drains out of the child's ears - Otitis Media with effusion.

Because the Eustachian tube is more horizontal in children, this makes it easier for it to become blocked. As the child grows the tube becomes more vertical and thus it is easier to drain naturally.

In Australia the most common method of treating OM is with antibiotics (Del Mar, 1994). However, this brings only short-term relief as no specific 'cure' has been found. For recurrent and persistent bouts of OM, grommets or ventilation tubes may need to be placed into the ear to assist with fluid draining.

Higgins (1994) reports that the exact cause of chronic ear disease is still unknown as no one virus, fungus or bacterium has been shown to be the culprit. As the old adage goes, 'Prevention is better than cure'. Kalokerinos stated in the Medical Journal of Australia, (1969, Vol.1,p.185 cited in Kalokerinos, 1998, para.8) "Find the answer to these ear infections and we will find the answer to everything."

Prevalence of otitis media

OM is one of the most common of childhood diseases. Up to 75% of all children will experience an ear infection, occurring mainly during infancy, but for some it may

continue throughout school life (Prince, 1999). Although OM affects all cultural groups, Aboriginal and Torres Strait Islander children have an OM prevalence rate ten times that of Caucasian children (Foreman, 1987; Moran, et al., 1979; Price, 1999; Sherwood, 1993).

Many researchers have labelled Indigenous children as 'otitis prone' in the sense that they are subject to early onset and to a high prevalence of recurring Chronic OM (e.g., Mathews et al., 1992). It has also been noted that the observed pattern of OM in Australian Indigenous populations is different to that exhibited by affluent populations of the developed world, having more in common with the experience of disadvantaged populations (Gee et al., 2000).

It is the Indigenous communities in rural and remote areas that tend to suffer the highest rates of OM (Gee et.al., 2000). Although prevalence rates vary from community to community and from time to time, Kalokerinos states that figures "can be established as being between 20% and 100%" (1998, paragraph 6).

Nienhuys & Burnip (1988) have estimated that in Queensland, 30% - 80% of Indigenous school age children will suffer from hearing loss at any one time. Erber, (1985, cited in Nienhuys, 1992) described the effects of early OM and associated CHL in the developing child. He believes that this will threaten the development of the four levels of auditory function: detection skills, auditory discrimination skills, word identification skills and word comprehension.

Most children suffering from OM have mild to moderate hearing losses in that they fall into the 20-60 decibel range which represents an educationally significant problem (Prince, 1991). Riechman, William & Healy state that "low sound energy voiceless consonants such as *p,t,k,s,sh,th* and *f*; plural endings (e.g., *s* and *es*); and final position fricatives (e.g. wi*th*, wa*s*, wi*sh*, and ha*lf*), will be masked and probably won't be heard by children with a mild hearing loss of 20-30 dB in the average classroom which has a noise level of 40-50 dB" (1997). It is interesting to note that Indigenous children learning English, (typically the language of instruction in schools), often have difficulties with hearing these sounds anyway as they do not

occur in some Indigenous languages (Lowell, 1990 in Price, 1993; Yonowitz et.al., 1995).

In Nienhuys' study on the effects of CHL on the Development of Indigenous children, he found that Indigenous children "may suffer hearing loss from very early infancy; hearing levels may not return to normal before adulthood since the disease seems to persist with poor treatment, and it is also likely to be fluctuating as the ear state changes between wet and dry perforations [of the eardrum] and OME [Otitis Media with effusion]" (1992, p. 6).

Because the condition is fluctuating, it can be present one day in a child and gone the next. "As many as eight out of ten children could have a middle ear infection and associated hearing loss at some time during the school year" (Price, 1999, p.4).

Research reviewed shows a clear link between OM and associated CHL to inhibiting auditory, communication and social development (in both the home and school language environments); behavioural difficulties and later academic achievement.

If children can't hear properly, they can't learn properly "... especially if they are learning a second, third or fourth language" (Price, 1999, p.4).

The study

In 1994 the Queensland Department of Health Golden Casket fund made $115 000 available to the Australian Rural Education Research Association Inc. (ARERA) to conduct research into educational and health strategies that could ameliorate the effects of Otitis Media in a remote community. Specifically, the project sought to investigate and then develop improved health practices related to Otitis Media and improved learning outcomes among the target group This project involving the Departments of Heath and Education commenced at a State School in western Queensland early in 1995 and was successfully completed in 1996.

In June 1996 the Rural Education Research and Development Centre (RERDC) received funding from the Queensland Health Promotion Council (QHPC) of

Queensland Health (QH) to conduct a further project. The project was to move from the research trial phase to a three-year program of implementation of successful practices suggested in the aforementioned project.

Objectives of the project were to:

1. reduce the incidence and effects of Otitis Media on people in two target communities;
2. raise community awareness of Otitis Media over a year, 1997;
3. raise teacher and child awareness of Otitis Media on children's learning;
4. improve learning outcomes of children who are suffering/have suffered Otitis Media;
5. have teachers develop strategies and materials to reduce effects of children's hearing loss;
6. empower students to exercise control over their learning;
7. embed appropriate practices in local communities; and
8. (included a 1999 revision of the project) produce a kit of learning materials and teacher resources for each school.

School sites

Using hearing health statistics, enrolment details and advice from health and education professionals three rural/remote schools were selected for the project. (Further details withheld in the interests of confidentiality.)

Implementation

The Project Officer carried out multiple visits to communities, schools and various health professionals. Particular attention was given to empowering the teacher aides in all the schools, the thought being that they remain in the school, are part of the community and function as bridges/links between the school and the parents and community, Workshops, staff seminars and social functions were held at all schools. Available teaching resources were acquired and supplied as kits to all schools. As well the Project Officer and teachers developed specific resources relevant to local needs and culture.

Evaluation methodology

Evaluating the outcomes of the project proved difficult for a variety of reasons:

1. There is a high rate of staff turnover in the schools involved and at least one changed significantly during the project in terms of student numbers and attendance. I was able to identify only one teacher who had been involved in the Otitis Media project and she had been associated with it for only one year. One teacher aide was identified as having been associated with the project and she provided some comments. All of the principals, save one, had moved to new appointments. New principals are not always briefed on past programs.

2. There are other organizations involved in seeking to ameliorate the impact of Otitis Media. Health workers who visit the school also implement strategies such as sound amplification systems. People working in the schools sometimes confuse one program with another

Questionnaires and interviews gathered information and opinion from persons involved in the implementation of the program in the schools. Phone interviews were conducted with the present and former principals and staff at the three schools. Personal interviews were also conducted with the Director, Aboriginal and Torres Strait Islander Health Program, Townsville, and the Team Leader, Hearing Unit, Aboriginal and Torres Strait Islander Health Program. Comments have also been received from teacher aides at the schools. Questions asked of principals, teachers and teacher aides related directly to program objectives as outlined in the 1997 submission and subsequent amendments.

Results

Summary of comments

1. *Did you as a teacher of indigenous students become more aware and better informed of the effects of Otitis Media on students' learning and the need to develop appropriate practices as a result of this project?*

   Responses to this question were very positively 'Yes'. Principals involved in the program noted that it had increased their awareness of Otitis Media and used the strategies proposed by the program to help the children. A new principal

suggested that the program would be more effective if he had received an induction to it.

2. *Were you, your teacher aides and health support staff able to involve the community in maintaining appropriate practices in children?*

   A former principal said that he had worked at trying to get the community to keep it going. The procedures suggested by the program (regular nose blowing, etc) were part of school procedures. One current principal said that he had not succeeded in maintaining community involvement. Community members would often say that child is 'pinnagarie' and considered unable to be helped. They could not see any connection to mainstream learning. Another principal suggested that she had been unable to maintain much community involvement.

3. *Was it possible to detect an improvement and reduction in Otitis Media in children and therefore an improvement in areas such as learning outcomes, truancy and classroom behaviour?*

   One principal commented that there was a reduction in Otitis Media when the simple breathe, blow, cough (BBC) routine is maintained. However, he did note that high teacher turnover (60% new staff each year) and lack of experienced teachers were always militating against maintenance of the program. Most of his teachers were first-year teachers and were in "survival mode" and unable to deal with other programs. Two other principals said that the program "would have helped but not in large percentages". In relation to truancy lots of other variables were involved and it was not possible to say that the Otitis Media program had any particular effect.

4. *Was there any evidence that the community was able to organize itself to deal with other health issues as a result of their involvement in the Otitis Media project, e.g., involvement of community health professionals? Has the school become more important in health care?*

   One principal commented that there was certainly a greater health awareness but that he believed it was a product of a variety of influences, including the Otitis Media project. A principal now no longer at the community but involved in the project from its inception stated that there was evidence to suggest that the community was able to organise itself more. Another principal was "not sure".

5. *The project prepared a resources kit for use in schools. Has this proved to be useful and does it continue to be used?*

   Because the resources kit was prepared and introduced following the revision of the project in 1999, there was no clear outcome suggested by principals and teachers. One person commented that it had been of use. Another noted that it would be of even greater use if one person (preferably a teacher aide) could take on responsibility for its use within the school. Indeed, one principal was seeking funding to employ a person whose responsibilities would include use of the resources kit.

An interview with the Director, Aboriginal and Torres Strait Islander Health Program, Townsville, confirmed the desirability of the project model; that is, an interdisciplinary approach to the problem, involving a partnership of Health and Educational professionals and agencies. He believes that such a partnership is essential. He commented that the appointment of a person to link these agencies may be necessary. Alternatively, he suggested that perhaps the school nurse may be able to take on this responsibility. Additionally, he believes that the parents and community need to be closely involved with any school-based program and that they need to "own" the program. He commented that he believed that the project suffered because of the time that elapsed between the visits of the Project Officer and confirmed that Otitis Media remains a problem in communities and does not seem to be improving.

Conclusion

In order to learn language, it is necessary to hear language. If a child is suffering a fluctuating conductive hearing loss during the critical period for language acquisition then this may cause learning difficulties, language delay and have long term social and educational effects. OM and associated CHL not only affect language learning at school, they can also affect learning of the home language.

Indigenous children living in remote areas have an alarmingly high rate of CHL due to chronic OM. Because of this, it is imperative that teachers of Indigenous children are trained and prepared to implement strategies to deal with the fact that eight out of

ten children in their class will have an infection and hearing loss at some time during the school year.

Support needs to be provided from medical, audiological and educational perspectives.

Research confirms that any strategy which is to be successful should: be interdisciplinary; addressed in a culturally appropriate way; take into account Indigenous ways of thinking; be well planned and evaluated, and, most importantly, be embedded in community. It seems that after almost two decades of 'intervention' the levels of incidence remain the same. In previous years programs have failed because of their 'one way' approach to the giving and receiving of information rather than an exchange or sharing of knowledge between the community and the 'experts'.

Active involvement of all service providers, community and policy makers is the only way children with OM are to have the opportunity to realise their social and educational potential (Higgins, 1994).

It is clear from the comments received that the program has had an impact on the communities while it was implemented but that at the conclusion of the program with the rapid turnover of staff, gains noted during the project seem to have dwindled subsequently. The intervention of health staff and their programs has also caused some confusion for those working in the schools about who was responsible for what and what program had what effect.

All of this is not to deny the relevance or validity of the model/philosophy proposed by the program, namely, that the problem of Otitis Media is best addressed through involvement of the community and school in concert with health professionals.

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